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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/918,377	07/30/2001	David D. Ratcliff	TI-33115	9994
23494 7590 02/02/2007 TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			EXAMINER TRAN, CON P	
			ART UNIT	PAPER NUMBER
			2615	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/02/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

09/918,377

Applicant(s)

RATCLIFF ET AL.

Examiner

Con P. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. In view of the Substitute Appeal Brief filed on 10/27/2006, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (a) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (b) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3 **Claims 1, 6-7, 12-13, and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Moorer U.S. Patent 6,904,152 in view of Cooper et al. U.S. Patent 5,333,200 (hereinafter, "Cooper").

Regarding **claim 1**, Moorer teaches an audio processing machine comprising (see Figs. 3, 4, 5, 6, 7, and respective portions of the specification):

a plurality of audio inputs (inputs of signals  $m_1$ ,  $m_2$ ,  $m_3$ , Figs. 5, 6, 7; col. 3, lines 48-52; col. 9, line 59 – col. 10, line 35; especially col. 9, lines 64-67);

a plurality of audio outputs (outputs of signals  $s_1$ ,  $s_2$ ,  $s_3$ ,  $s_4$ ,  $s_5$ ,  $a_0$ ,  $a_1$ ,  $b_1$ , Figs. 4, 5, 6; col. 9, line 59 – col. 10, line 35; especially col. 10, lines 12-15);

a plurality of audio processing channels (channels of recording or transmission medium;  $a_0$ ,  $a_1$ ,  $b_1$ , are processed, i.e., recorded, in channels of recording medium 127, 127', Figs. 5, 6, 7; col. 5, lines 41-47); and

and a plurality of multiply switches (matrices 129, 131, Fig. 6) configured to selectively mix (i.e., depending angle, Fig. 8; by processor 133 or 141, Figs. 5 or 6; col. 10, line 36 – col. 11, lines 30) the plurality of audio inputs (inputs of signals  $m_1$ ,  $m_2$ ,  $m_3$ , Fig. 6) and the plurality of audio outputs (outputs  $a_0$ ,  $a_1$ ,  $b_1$ , of microphone matrix 129, Fig. 6, become inputs of speaker matrix 131; control processor 145 controls matrix 131 in the same manner of control processor 59 controlling matrix 53, Fig. 4, see col. 10, lines 5-37; col. 8, lines 49-46) such that audio signals passing through the plurality of audio inputs are processed via a plurality of audio processing channels selected from the plurality of audio processing channels (of recording medium 127', Figs. 4, 6; col. 5, lines 41-47) to generate at least one desired audio output signal ( $s_1$ ,  $s_2$ ,  $s_3$ ,  $s_4$ ,  $s_5$ , Figs. 4, 5, 6; col. 9, line 59 – col. 10, line 35; especially col. 10, lines 12-15).

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Moorer further discloses to implement the sound processing in digital form (col. 6, lines 35-38), improvement in surround sound technique (col. 1, lines 14-16).

However, Moorer reference does not explicitly disclose the audio signals are processed via a plurality of audio filters selected from the plurality of audio filters.

Cooper teaches an audio stereo system which provides enhanced sound-imaging localization (col. 3, lines 54-57) in which the audio signals are processed via a plurality of audio filters selected from the plurality of audio filters (BQ filters 174, 184, Fig. 6A; col. 14, lines 23-29).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to incorporate the plurality of audio filters taught by Cooper with the audio processing machine of Moorer such that the audio signals are processed via a plurality of audio filters as claimed for purpose providing enhanced sound-imaging localization, as suggested by Moorer in column 3, lines 54-57.

Regarding **claims 7, 13, and 18**, these claims have similar limitations as claim 1. Therefore, they are rejected under Moorer in view of Cooper for the same reasons set forth in the rejection of claim 1.

Regarding **claims 6, and 12**, Cooper, as modified, further teaches the plurality of audio filters comprise biquad filters (BQ filters 174, 184, Fig. 6A; col. 14, lines 23-29).

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4. **Claims 2-3, 8-9, 14-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Moorer U.S. Patent 6,904,152 in view of Cooper et al. U.S. Patent 5,333,200 (hereinafter, "Cooper"), and further in view of Matheny et al. US. Patent 6,148,314 (hereinafter, "Matheny").

Regarding **claims 2, 8, and 14**, Moorer in view of Cooper teaches audio processing device according to claims 1, 7, and 13, respectively. However, Moorer in view of Cooper does not explicitly disclose wherein the plurality of multiply switches are comprised of single-cycle multiply switches.

Matheny teaches the multiplier 18, Fig. 2A performs a single-cycle multiply (col. 5, lines 36-41). Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to incorporate the single-cycle multiply switches taught by Matheny with the audio processing machine of Moorer in view of Cooper such that the multiply switches are comprised of single-cycle multiply switches as claimed in order to allows the processing cycle count for the fed back additions to be reduced, as suggested by Matheny in column 2, lines 40-41.

Regarding **claims 3, 9, and 15**, Moorer in view of Cooper teaches audio processing device according to claims 1, 7, and 13, respectively. Matheny, as modified, further teaches wherein the plurality of multiply switches are comprised of programmable multiply switches (col. 3, lines 49-57).

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5. **Claims 5, 11, and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Moorer U.S. Patent 6,904,152 in view of Cooper et al. U.S. Patent 5,333,200 (hereinafter, "Cooper"), and further in view of Poss US. Patent 6,151,179.

Regarding **claims 5, 11, and 17**, Moorer in view of Cooper teaches audio processing device according to claims 1, 7, and 13, respectively. However, Moorer in view of Cooper does not explicitly disclose wherein the multiply switches are further configured to generate a first logic signal to open a conductive path, a second logic signal to close the conductive path, and a third logic signal to open the conductive path while inverting a signal phase associated with an audio signal passing there through.

Poss discloses a signal processing apparatus for processing an analog input signal (col. 1, lines 57-59) in which the algorithms for the gain and timing error signals the value  $Y(k-2)$  is a multiplier having a value of +1, -1 or 0 for each sample and hold on any given cycle. To multiply by one when  $Y(k-2)=1$ , the signal out of the sample and hold is not changed. To multiply by -1 when  $Y(k-2)=-1$ , the signal current output is simply reversed by a switch inside the sample and hold circuit. To multiply by zero when  $Y(k-2)=0$ , the sample and hold current is shut off by a switch within the sample and hold circuit.

Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to incorporate the multipliers as taught by Poss with the audio processing machine of Moorer in view of Cooper so that the multiply switches are further configured to generate a first logic signal to open a conductive path, a second

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logic signal to close the conductive path, and a third logic signal to open the conductive path while inverting a signal phase associated with an audio signal passing there through as claimed for purpose of providing an improved signal processing apparatus, as suggested by Poss in column 1, lines 1-2.

6. **Claims 4, 10, 16, and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Moorer U.S. Patent 6,904,152 in view of Cooper et al. U.S. Patent 5,333,200 (hereinafter, "Cooper") in view of Matheny et al. US. Patent 6,148,314 (hereinafter, "Matheny"), and further in view of Tang et al. U.S. Patent 6,298,370 (hereinafter, "Tang").

Regarding **claims 4, 10, and 16**, Moorer in view of Cooper in view of Matheny teaches audio processing device according to claims 3, 9, and 15, respectively. However, Moorer in view of Cooper in view of Matheny does not explicitly disclose wherein the programmable multiply switches are reconfigurable on-the-fly.

Tang teaches a process of a computer system wherein the programmable multiply switches are reconfigurable on-the-fly (col. 116, lines 30-35). Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to incorporate the programmable multiply switches which are reconfigurable on-the-fly as taught by Tang with the audio processing machine of Moorer, Cooper, Matheny in combination for purpose of allocation logic operations for performing



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resource management and dynamic load balancing for computer systems, as suggested by Tang in column 116, lines 37-39.

Regarding **claim 19**, Moorer in view of Cooper teaches audio processing device according to claims 18. However, Moorer in view of Cooper does not explicitly disclose the multiply switches are programmable multiply switches.

Matheny teaches a data processing system (2, Fig. 1) in which the multiplier (18, Fig. 2A) is programmable multiplier (col. 5, lines 30-41).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to incorporate the programmable multiplier taught by Matheny with the audio processing machine of Moorer in view of Cooper such that the multiply switches are comprised of programmable multiply switches as claimed in order to allow the processing cycle count for the feedback additions to be reduced, as suggested by Matheny in column 2, lines 40-41.

However, Moorer in view of Cooper in view of Matheny does not explicitly disclose wherein the programmable multiply switches are reconfigurable on-the-fly.

Tang teaches a process of a computer system wherein the programmable multiply switches are reconfigurable on-the-fly (col. 116, lines 30-35). Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to incorporate the programmable multiply switches which are reconfigurable on-the-fly as taught by Tang with the audio processing machine of Moorer, Cooper, Matheny in combination for purpose of allocation logic operations for performing

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resource management and dynamic load balancing for computer systems, as suggested by Tang in column 116, lines 37-39.

### ***Response to Arguments***

7. Applicants' arguments with respect to claims 1-19 have been considered but are moot in view of the new grounds of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Con P. Tran whose telephone number is (571) 272-7532. The examiner can normally be reached on M - F (8:30 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Vivian C. Chin can be reached on (571) 272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cpt *CPJ*  
January 11, 2007

*[Signature]*  
VIVIAN CHIN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

*1/22/07*